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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/028,805	12/19/2001	Xianbin Wang	28940-00116USPT	3089
7590 08/16/2005			EXAMINER	
Lisa K. Jorgenson, Esq. STMicroelectronics, Inc. 1310 Electronics Drive Carrollton, TX 75006-5039			YANG, LINA	
			ART UNIT	PAPER NUMBER
			2665	

DATE MAILED: 08/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/028,805		WANG, XIANBIN	
	<b>Examiner</b>		<b>Art Unit</b>	
	Lina Yang		2665	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 December 2001.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-46 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-46 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 4/2/2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>2/8/2002</u> .  | 6) <input type="checkbox"/> Other: _____                                    |

### DETAILED ACTION

1. Claims 1-43 are pending in the application.

#### ***Specification***

2. The disclosure is objected to because of the following informalities.

The specification on Page 1, lines 3-4, discloses "for patent Serial No. \_\_\_\_\_", however, no serial number is provided.

Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 8 and 23 are rejected under 35 U.S.C. 112, second paragraph.

Claim 8 provides for the use of "steps", but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claim 8 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim 23 provides for the use of "means", but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claim 23 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351 (a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 16, 31 and 32 are rejected under 35 U.S.C. 102(e) as being anticipated by Reddy (U. S. Patent Application Publication No. 20020176368).

Regarding claim 1, Reddy teaches a method for adapting a digital subscriber line (DSL) communications duplexing ratio to meet user application needs, comprising the steps of:

determining, for a new DSL loop communication, a required upstream bit rate and a required downstream bit rate for the user application ([0005]);

dividing the required upstream bit rate by the required downstream bit rate to obtain a desired duplexing ratio for the new DSL communication ([0006] and [0022]); and

adapting a duplexing ratio implemented by a DSL modem in support of the new DSL loop communication to at least approximate the desired duplexing ratio ([0008] and [0009]).

Regarding claim 16, Reddy teaches an apparatus for adapting a digital subscriber line (DSL) communications duplexing ratio to meet user application needs, comprising:

means (processing device 203 in fig. 3) for determining, for a new DSL loop communication, a required upstream bit rate and a required downstream bit rate for the user application, the required upstream bit rate being divided by the required downstream bit rate to obtain a desired duplexing ratio for the new DSL communication ([0017]); and

means (processing device 203 in fig. 3) for adapting a duplexing ratio implemented by a DSL modem in support of the new DSL loop communication to at least approximate the desired duplexing ratio ([0017]).

Regarding claim 31, Reddy teaches a digital subscriber line (DSL) transceiver (processing device 203 in fig. 3) connected to a certain loop in a cable bundle, comprising:

an idle cell removal machine that is operable to determine for a new DSL loop communication on the certain loop a required upstream bit rate and a required downstream bit rate for a user application, the required upstream bit rate being divided by the required downstream bit rate to obtain a desired duplexing ratio for the new DSL communication ([0017]);

a duplexing controller operable to adapt a duplexing ratio implemented in support of the new DSL loop communication to at least approximate the desired duplexing ratio ([0017]).

Regarding claim 32, Reddy further teaches that the transceiver (processing device 203 in fig. 3) implements any one of a plurality of discrete duplexing ratios, the duplexing controller being further operable to select a certain one of the discrete

duplexing ratios that most closely meets the desired duplexing ratio ([0018] and [0019]).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 2-3, 17-18 and 33-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Reddy (U. S. Patent Application Publication No. 20020176368) in view of Duvaut et al. (U. S. Patent Application Publication No. 20030108095).

Regarding claims 2-3, 17-18 and 33-34, Reddy differs from the claimed invention in that Reddy does not specifically teach that the step of adapting the duplexing ratio comprises the step of adjusting analog/digital filters to alter an upstream and downstream bandwidth used by the modem for the new DSL loop communication. However, it's well known in the art that a filter is used for adjusting the upstream and downstream bandwidths, for example, Duvaut teaches that an adaptive filter is used to attenuate the bandwidth (754 in fig. 7; fig. 9A and [0079]; fig. 9B and [0080]; fig. 9C and [0081]). It's obvious to one having ordinary skill in the art to see the adaptive would be

an analog filter for an analog signal, and a digital filter for a digital signal. Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to include the step of adjusting analog/digital filters to alter an upstream and downstream bandwidth used by the modem for the new DSL loop communication, as taught by Duvaut in the assembly of Reddy in order to achieve the desired bandwidth, and therefore, the desired ratio.

5. Claims 4, 19 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Reddy (U. S. Patent Application Publication No. 20020176368) in view of Cole (WO 00/52894).

Regarding claims 4, 19 and 35, Reddy differs from the claimed invention in that Reddy does not specifically teach that the step of determining further comprises the step of removing unnecessary idle ATM cells, and the required upstream/downstream bit rate for the new DSL loop communication is a bit rate needed for the new DSL loop communication without inclusion of unnecessary idle ATM cells. However, Cole discloses a transceiver to receive data to include a usage-monitoring unit wherein the data includes both the actual data and the idle cell data (Abstract, lines 1-5) implemented in a DSL communication system (Specification, Page 1, lines 7-40). Cole further discloses determining a usage parameter based on the actual data (Abstract, lines 5-9). Cole further discloses that when the user is not fully utilizing the available (allotted) bandwidth idle cells are inserted to bring the overall data rate up wherein the



idle cells are removed in the receiver, but still require the same power and processing resources at the transmitter (Specification, Page 2, lines 19-24). Cole further discloses the usage monitoring unit (Fig. 2, element 170) determines the average and peak data flows based on the actual data (Specification, Page 5, lines 1-4) and adjust the bit loading to the dynamic throughput requirements (Specification, Page 3, lines 35-40 & Specification, Page 5, lines 29-33 & Specification, Page 6, lines 1 1-13, 33-37 & Claim 4). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include the step of determining further comprises the step of removing unnecessary idle ATM cells, and the required upstream/downstream bit rate for the new DSL loop communication is a bit rate needed for the new DSL loop communication without inclusion of unnecessary idle ATM cells, as taught by Cole in the assembly of Reddy in order to provide (adjust) the necessary bandwidth for the transfer of data.

6. Claims 5, 20 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Reddy (U. S. Patent Application Publication No. 20020176368).

Regarding claims 5, 20 and 36, Reddy differs from the claimed invention in that Reddy does not specifically teach that the implemented duplexing ratio defines a total available upstream bandwidth and a total available downstream bandwidth for the new DSL loop communication on a certain DSL loop. However, it is known in the art that the transmission bandwidth is a shared resource. Thus, the required upstream/downstream bandwidth corresponding to the required upstream/downstream bit rate can not be more

than the total available upstream/downstream bandwidth. Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to include the implemented duplexing ratio defines a total available upstream bandwidth and a total available downstream bandwidth for the new DSL loop communication on a certain DSL loop, in order to efficient use the available resource.

7. Claims 6-13, 21-28 and 37-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Reddy (U. S. Patent Application Publication No. 20020176368) in view of Sadjadpour et al. (WO 01/61956).

Regarding claims 6-7, 21-22 and 37-38, Reddy teach a method comprising the steps of:

calculating, for a plurality of location positions of the required upstream/downstream bandwidth for the new DSL loop communication within the corresponding total available upstream/downstream bandwidth, a crosstalk noise effect (coupled in the "SNR") with respect to other active DSL loops in a same cable bundle ([0008] and [0009]); and

choosing a location position for the required upstream/downstream bandwidth to carry the new DSL loop communication within the total available upstream/downstream bandwidth ([0008] and [0009]).

Although Reddy does not specifically teach to choose a location position for the required upstream/downstream bandwidth where a crosstalk noise effect with respect to other active DSL loops in a same cable bundle is minimized, Reddy teaches to couple a SNR into the iteration bandwidth apportion algorithm (figs. 3A and 3B; [0018]). Furthermore, Sadjadpour discloses a method and apparatus for allowing any bit/power allocation algorithm to meet the objective of minimizing the near end cross talk (page 6 lines 21-23 & Fig. 6). More specifically, Sadjadpour discloses various objective functions for optimization in joint minimization of the NEXT (Fig. 6 ; Page 15, lines 1-27; Page 16, lines 1-12), and algorithms implemented in DSL modems utilizing various performance functions that minimize the total allocated power or maximize the data rate or a combination of the two with the purpose of either maximizing the total transmitted data or meeting the desired data rate within the constraints of the budgeted power (Page 5 lines 25-28); or optimizing the NEXT parameter (minimizing the total NEXT) for the bit and power allocation algorithms rather than minimizing the total power consumed (page 11, lines 1-26). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to include choosing a location position for the required upstream/downstream bandwidth where a crosstalk noise effect with respect to other active DSL loops in a same cable bundle is minimized, as taught by Sadjadpour, in the assembly of Reddy in order to get better performance.

Regarding claims 10, 25 and 41, Sadjadpour further discloses the crosstalk noise effect is near-end crosstalk (NEXT) noise effect (page 4 lines 25-26).

Regarding claims 11, 26 and 42, Reddy further discloses that the calculated crosstalk noise effect is an estimation calculated effect (page 11, equation 1).

Regarding claims 12, 27 and 43, Sadjadpour further discloses that the calculated crosstalk noise effect is an analytically calculated effect ([0018], where measured "SNR" contains the combination of NEXT, FEXT and additive white Gaussian noise).

Regarding claims 13, 28 and 44, Reddy further discloses the DSL modem is selectively configurable to implement any one of a plurality of discrete duplexing ratios, the step of adapting further comprising the step of selecting a certain one of the discrete duplexing ratios that most closely meets the desired duplexing ratio ([0017]).

8. Claims 14, 29 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Reddy (U. S. Patent Application Publication No. 20020176368) in view of Shimura et al. (U. S. Patent Application Publication No. 20020041656).

Regarding claims 14, 29 and 45, Reddy further discloses monitoring noise on subcarriers used to implement the duplexing ratio for the new DSL loop communication (measuring SNR [0018]). Reddy differs from the claimed invention in that Reddy does not specifically teach testing if the monitored noise exceeds a threshold on any of the subcarriers; and if so, abandoning the subcarrier. However, Shimura teaches a method

to measure the noise level and compare with a template to threshold to determine whether or not the channel (or subchannel) is qualified or not ([0021]). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to include testing if the monitored noise exceeds a threshold on any of the subcarriers; and if so, abandoning the subcarrier, as taught by Shimura in the assembly of Reddy in order to maintain the good performance.

9. Claims 15, 30 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Reddy (U. S. Patent Application Publication No. 20020176368) in view of Bullman (U. S. Patent No. 6,754,186)

Regarding claims 15, 30 and 46, Reddy differs from the claimed invention in that Reddy does not specifically teach canceling echoes when upstream and downstream are overlapped in the adapted duplexing ratio. However, Bullman teaches that if echo cancellation is supported at both the Central Office and the client, then the DMT system can operate in an overlapped spectrum mode where tones are used for both upstream and downstream transmissions (col.1 lines 36-39). Therefore, it would have been obvious for one of ordinary skill in the art at the time when the invention was made to include canceling echoes when upstream and downstream are overlapped in the adapted duplexing ratio, as taught by Bullman in the assembly of Reddy in order to let the method operate when upstream and downstream are overlapped.

***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Lu et al. (US Patent No. 6,351,487) teaches a digital subscriber line device driver using communication window size based on relative data rates of upstream and downstream communications

Lou et al. (US Patent No. 6,778,517) teaches a method to dynamically updating the ratio of the upstream and downstream data rate.

Sadjadpour teaches a method and an apparatus for minimizing near end cross talk due to discrete multi-tone transmission in cable binders.

Art Unit: 2665

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lina Yang whose telephone number is (571)272-3151.

The examiner can normally be reached on 7:30am-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on (571)272-3155. The fax phone number for the organization where this application or proceeding is assigned is 517-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LY

A handwritten signature in black ink, appearing to read 'Huy D. Vu', with a long horizontal flourish extending to the right.

**HUY D. VU**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2600**